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ABSTRACT

The effectiveness of a procedure which combined prompting and reinforcement principles to modify behavior relevant to environmental pollution was studied. During treatment customers entering a grocery store were handed a circular which urged them to buy drinks in returnable bottles (i.e., prompting); after making a purchase, customers were given social approval if they purchased drinks in returnable bottles (i.e., reinforcement). The ABA design indicated that beverage buying behavior at one grocery store was markedly influenced by the treatment procedure; for 2 other markets, treatment effects were not pronounced. An explanation for the differential success of the prompting-reinforcement method is discussed. (Author)

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An Attempt at Applying Prompting and Reinforcement Toward Pollution Control

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Although the early applications of reinforcement principles for modifying behavior were generally confined to the individual treatment of institutionalized patients, behavior therapists have recently adapted their techniques for large-scale control in a variety of settings, e.g., the school classroom (e.g., Osborne, 1969), the penal institution (e.g., Cohen, Filipczak, & Bix, 1967), and the mental hospital (e.g., Ayllon & Azrin, 1968). With increasing awareness of social problems (e.g., overpopulation, ecological imbalance, unemployment, etc.), it is apparent that behavior control techniques should be developed for application at the community level. This concern that clinical psychology change its focal point from the behavior of institutionalized individuals toward the social behaviors of the community was recently emphasized by Albee (1970).

The purpose of the present study was to determine the effectiveness of a behavior modification technique for altering a social behavior relevant to environmental pollution. Specifically, a combination of prompting and reinforcement was used to decrease the probability that a customer would select drinks in nonreturnable bottles. The modification technique (i.e., prompting and reinforcement) was analogous to a procedural combination

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of prompting and shaping used by Ayllon and Azrin (1964). Following a prompting-shaping rule, the behavior therapist prompts a desired response and then immediately reinforces the response when it occurs. In individual therapy situations prompting is conveniently accomplished via verbal instructions. However, to influence behavior on a wide scale, prompts take the forms of posters, pamphlets, statements on radio and television, etc. In the present study, grocery store customers were handed a circular designed to prompt the purchase of drinks in returnable rather than throwaway containers. After the customers made a purchase, they were given social reinforcement if they purchased returnable bottles.

Method

Managers. The behavior managers were juniors and seniors enrolled in a behavior modification course during the summer session at Virginia Polytechnic Institute and State University. The 28 students were divided into three teams: Team Kroger (five males, five females); Team Mick-or-Mack (six males, four females); and Team Seven-Eleven (five males, three females). Each team was responsible for carrying out base line, treatment, and follow-up at the particular market indicated by the team name.

Subjects. Each person who purchased beverages available in both returnable and nonreturnable containers at Kroger, Mick-or-Mack, or Seven-Eleven stores during the observation periods of the present study served as Ss. Approximately one-half of Blacksburg, Va., from which the Ss were sampled, consists of students and faculty from the university; a majority of the remaining population is composed of families receiving income

through farming or from one of three small industrial plants. The proportion of college students and faculty patronizing each of the stores was approximately the same.

Procedure. Base line data were recorded at each store for 6 consecutive days between the hours of 4 and 5 p.m. (Monday through Saturday). During base line, the behavior managers stood inconspicuously adjacent to the check-out counter and recorded the number and type of beverage containers purchased by each customer (i.e., returnable bottles, throw-away bottles, or cans). In addition, the flavor and brand name of each purchased drink were listed.

Following 1 wk. of base line recording, treatment was administered daily for 2 wks. During the same observation periods employed during base line, one manager stood at the store entrance and handed each incoming customer a one-page circular designed to prompt his purchase of beverages in returnable bottles. Specifically, the prompt was an 8 1/2 x 14 in. sheet of white paper on which the following statements were boldly printed: "BUY RETURNABLE BOTTLES, FIGHT LITTER, SAVE YOUR MONEY, SAVE TAX DOLLARS; In buying returnable bottles, you are helping to solve one of America's most pressing problems--THE PROBLEM OF LITTER." Three other managers (A, B, & C) remained inside the store during treatment periods. Manager A recorded data inconspiciously and with his hand signaled Manager B, who was located near the exit door, whether a given customer bought a majority of returnable bottles. When leaving the check-out counter, each "returnable-bottle customer" was approached by Manager B who smiled and said, "Thank-you for your help in fighting pollution by buying your drinks in returnable bottles." Before each customer left the store, Manager C asked

him how many returnable and nonreturnable containers he purchased and charted the amounts on a large poster located near the exit door.

Immediately following the 2 wk. of treatment, 1 wk. of follow-up data was obtained by taking daily recordings as in base line. Four weeks later, the managers obtained 2 additional wk. of follow-up data during the daily 4-5 p.m. observation periods.

Results and Discussion

For the observation periods at each store the proportion of customers who purchased drinks in returnable bottles was tabulated (i.e., proportion buying returnables = number of returnable-bottle customers/total number of drink customers). A returnable-bottle customer was one who bought more than one-half of his drinks in returnable bottles. When defining a customer's purchase as "returnable" or "nonreturnable," only those drinks that were available in both returnable and throwaway containers at the given store were considered. The total number of beverage customers varied markedly between observation hours (i.e., range = 9-67), but the weekly average did not differ greatly among stores. For example, at each store the average number of customers buying drinks during the daily observation periods for the 6 wk. were as follows (average frequencies are rounded off to the nearest whole number): (a) Kroger: base line (26), treatment (32, 28), follow-up (26, 16, 14); (b) Mick-or-Mack: base line (30), treatment (25, 30), follow-up (25, 11, 11); and (c) Seven-Eleven: base line (27), treatment (24, 29), follow-up (29, 12, 14). The notably lower averages for the latter 2 wk. of follow-up were probably due to the change in seasons from summer to fall.

Insert Fig. 1 about here

Fig. 1 depicts the proportion of returnable-bottle customers for each daily observation period during base line and treatment. The graph indicates that prompting and reinforcement were quite successful in increasing the proportion of returnable-bottle customers at the Seven-Eleven store but was not so successful at the Kroger and Mick-or-Mack stores. However, the figure does indicate proportions above base line at Kroger and Mick-or-Mack on some treatment days (i.e., proportions greater than .70). The average percentage increase in returnable-bottle customers from base line to treatment was 2% at Kroger, 13% at Mick-or-Mack, and 32% at Seven-Eleven.

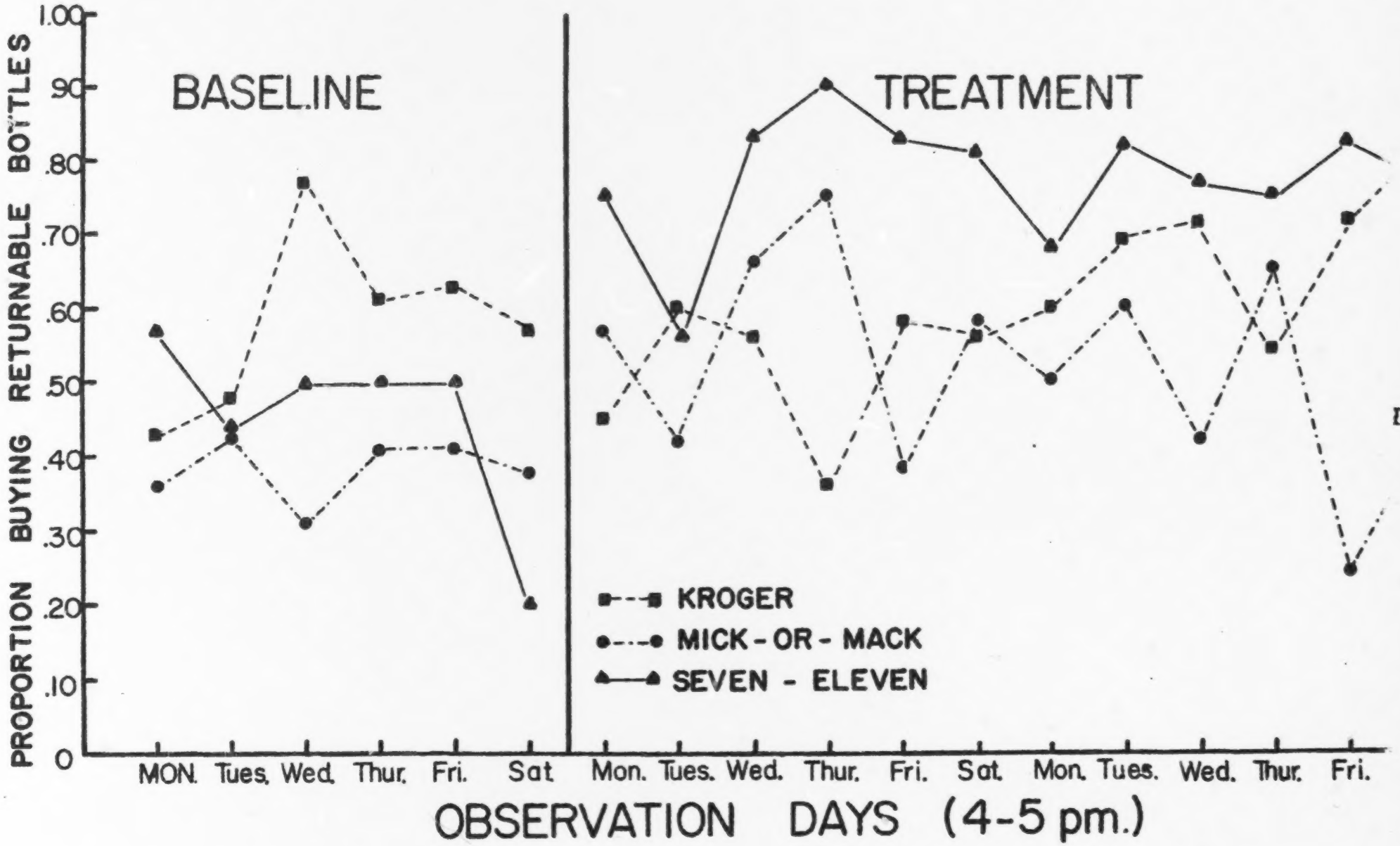
The follow-up data of Fig. 2 indicate that on removal of treatment the proportion of returnable-bottle customers dropped from the level achieved during treatment. The pronounced decrease at Seven-Eleven and the absence of proportions higher than .70 at the Kroger and Mick-or-Mack stores demonstrate the temporary effect of treatment. From treatment to the first week of follow-up, the average percentage drop in returnable-bottle customers was 3% at Kroger, 5% at Mick-or-Mack, and 20% at Seven-Eleven.

Insert Fig. 2 about here

An explanation for the more pronounced treatment effects at Seven-Eleven might be based on the suggestion that the effectiveness of a prompt varies inversely with the time interval between prompt administration and the opportunity for the desired response (Ayllon & Azrin, 1968). That is, Seven-Eleven is a small store where customers usually make a quick purchase

of only a few items, and, therefore, relatively little time elapsed between receiving the prompt and purchasing drinks. On the other hand, the typical Kroger or Mick-or-Mack patron was not making a "quick-stop," but rather was doing weekly or monthly shopping. Therefore, these customers read the prompt and then interposed several minutes looking for bargains, filling up food carts, making dinner decisions, standing in line, etc. Consequently, the time interval between receiving a prompt and selecting a beverage was much longer for the average Kroger and Mick-or-Mack customer than for the Seven-Eleven customer.

In summary, a behavior modification technique combining principles of prompting and reinforcement was relatively successful in modifying a social behavior related to one aspect of environmental pollution. Although a reasonable explanation was offered to account for the differential success of the treatment procedure, much additional research is certainly needed to specify those variables that influence the efficacy of behavior modification techniques when applied to alter social behavior on a community level.


BASELINE
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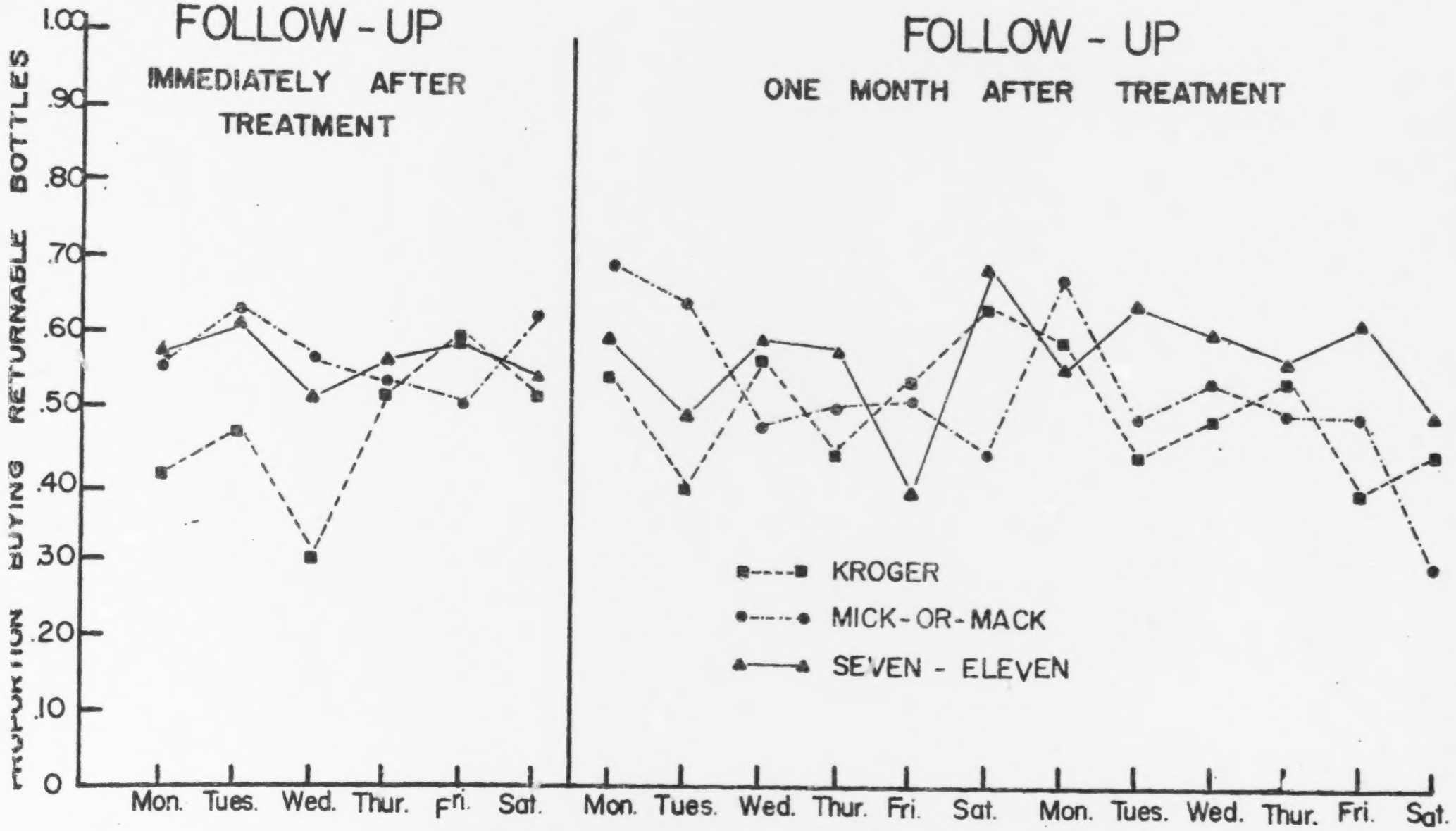
MON. Tues. Wed. Thur. Fri. Sat
Mon. Tues. Wed. Thur. Fri. Sat. Mon. Tues. Wed. Thur. Fri.
KROGER
MICK - OR - MACK
SEVEN - ELEVEN
OBSERVATION DAYS (4-5 pm.)


FOLLOW - UP
IMMEDIATELY AFTER TREATMENT
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ONE MONTH AFTER TREATMENT
PROPORTION BUYING RETURNABLE BOTTLES
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KROGER
MICK-OR-MACK
SEVEN - ELEVEN
Mon. Tues. Wed. Thur. Fri. Sat. Mon. Tues. Wed. Thur. Fri. Sat. Mon. Tues. Wed. Thur. Fri. Sat.
OBSERVATION DAYS (4-5pm.)

Figure Captions

Fig. 1. The proportion of drink customers who purchased a majority of returnable bottles during the daily observation periods for one week of base line and two weeks of treatment.

Fig. 2 The proportion of drink customers who bought a majority of returnable bottles during the daily observation periods for three follow-up weeks.

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